L. E. Dickson: "On higher congruences and modular invariants."

Max Mason: "Note on Jacobi's equation in the calculus of variations."

G. W. Hill: "Subjective geometry."

G. A. Bliss: "A method of deriving Euler's equation by means of an invariant integral."

C. N. Haskins: "On the second law of the mean."

Edward Kasner: "The contact transformations of mechanics."

Edward Kasner: "The plane sections of an arbitrary surface."

G. A. Miller: "Note on the periodic diurnal fractions."

F. R. Sharpe: "The inner force of a moving electron."

W. H. Roever: "Brilliant points of curves and surfaces."

Frank Irwin: "Transformations of the elements x, y, y', $\cdots$, $y^{(k)}$ that carry a union of such elements over into a union."

The San Francisco Section met at Stanford University also on February 29. The Chicago Section will meet April 17–18. The next regular meeting of the society will be held on April 25. The summer meeting will be held at the University of Illinois, September 10–11.

F. N. Cole,
Secretary

DISCUSSION AND CORRESPONDENCE

LAFAYETTE DEPOSITS IN LOUISIANA

To the Editor of Science: In your current number (February 28, 1908, page 351) Professor G. D. Harris suggests assigning the Lafayette formation to the Pleistocene, rather than the Pliocene, on the basis of associated fossils brought up in borings from depths of 1,500 feet or more. In this connection it is worth while to consider the alternative hypothesis that the beds tapped by the drill in southern Louisiana are redeposited Lafayette materials rather than original deposits. It is to be noted as tending to favor the alternative hypothesis that the Lafayette deposits are made up of residuary products gathered from the interior and laid down along shore (with little admixture of other material) during a period of continental depression, the distribution having been effected by river currents or wave action, or by both combined; so that it seems improbable that materials of this distinctive type could have been deposited far off-shore, and especially at depths of 2,000 feet or more—for to the depth of the boring noted by Professor Harris must be added the 500 or more feet of subsidence during the Lafayette period. It is also to be remembered that among the striking features of the Lafayette formation is its extensive erosion, especially in the Mississippi embayment: From a latitude above the mouth of the Missouri to the gulf the formation has been completely removed over an area averaging 50 to 75 miles in width, aggregating fully 40,000 square miles—*i. e.*, about one eighth of the total area of the formation above present tide level. Moreover, it seems certain both from evidence of remnants and from physical considerations that this was the thickest portion of the formation; so that in this district something like a fifth of the aggregate volume of the deposits must have been eroded away, largely during the post-Lafayette high-level period when that portion of the continent about the present mouth of the Mississippi stood a thousand feet or more above its present level. During this high-level period the Lafayette materials might well have been redeposited at what was then a limited depth below the surface of the gulf, with little admixture of foreign matter. Such an association would be quite consistent with Professor Harris's paleontologic evidence; and it has the advantage of consistency both with the physical conditions attending the genesis and partial degradation of the formation, and with the stratigraphic relations found farther in-shore both in the Mississippi Valley and along the middle Atlantic slope.

W J McGee

A HANDY SUBSTITUTE FOR THE BLAST BLOWPIPE IN BLOWPIPE ANALYSIS

It occurred to me that the small rubber bulb which is used to furnish the atomized alcohol for the platinum tip in an ordinary pyrography outfit, might profitably, where there is no equipment for tapping a compressed air

chamber, be employed for a continued blast in blowpipe analysis.

A very satisfactory test was obtained by attaching the rubber tube of a medium-sized bulb immediately to the blowpipe and using the muscular contraction of the hand instead of the cheeks—much to the relief of the latter. The strength of the blast was surprising. A strong oxidizing flame of about two inches could be secured easily and with a small amount of gas-supply and one filling of the bulb, a steady flame was given for more than a half-minute. A larger size foot-apparatus proved much more powerful. The only difficulty was that it was not easy to make a small reducing flame. For handy and continuous work with difficultly reducible minerals—shortening many processes very much—and in giving the instructor an opportunity to teach during his personal blowpipe instruction, it has considerable practical value, besides doing away with the necessity of bringing the lips into contact with the blowpipe.

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SPECIAL ARTICLES

TRANSPLANTATION OF FORMALDEHYDE-FIXED BLOOD VESSELS

IT has been demonstrated that segments of blood vessels may be transplanted successfully from one species of animal into another, *e. g.*, cat or rabbit into dog.[1] Consideration of these results led me to transplant segments of blood vessels that had been preserved in some fixing solution.[2]

In the case here reported abdominal vena cava of dog preserved in 2.5 per cent. formalin (in 0.9 per cent. NaCl) for 60 days was used. The day before the operation the segment, which was about 0.75 cm. long and 0.5 cm. in diameter, was removed from the formalin solution, washed in dilute ammonia, dehydrated in absolute alcohol and impregnated with paraffine oil. It was interposed between and sutured to the cut ends of the right common carotid artery of a medium-sized bitch. The diameter of the artery was considerably less than that of the venous segment.

The animal made a rapid and uneventful recovery, the wound healing promptly. Clinical examination 22 days after the operation revealed a strong pulsation on the course of the artery at the site of the transplanted segment. The following day the neck was opened and the vessel directly examined. The segment was found to be about 1.5 cm. long and .75 cm. in diameter. It pulsated strongly and the circulation through it was excellent. The walls appeared to be slightly thickened but pliable. In appearance it resembled similar segments transplanted immediately after removal. The wound was closed and the animal returned to its cage. No histological studies have as yet been made, but material is being accumulated for that purpose.

Conclusion.—A segment of dog's abdominal vena cava preserved in formaldehyde for two months and then interposed between the ends of a dog's carotid artery may adequately serve the mechanical function of an artery for more than three weeks.

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[1] Carrel, *Journal of Experimental Medicine*, IX., p. 226, 1907; Guthrie, *American Journal of Physiology*, XIX., p. 482, 1907; Guthrie, *Proceedings American Physiological Society*, 1907.

[2] Guthrie, *American Journal of Physiology*, XIX., p. 486, 1907.

A DROUGHT-RESISTANT HICKORY

WHILE investigating the distribution of the hickories in western Arkansas, in behalf of the federal forest service, the writer recently had occasion to note the drought-resistant quality of a little-known member of the genus —a variety probably most closely related to *Hicoria glabra* var. *odorata* Sarg.[1] This form

[1] The form occurring in Arkansas does not seem to conform closely either to *H. glabra* var. *odorata* Sarg. or to *H. villosa* Ashe. The writer, however, strongly disapproves of the publication of any new species, or even varieties in this genus, until the limits of present accepted forms be more accurately established.